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## CIA Analysts Explain Mystery of TWA Flight 800 "Missile Sightings"

*DI/OTI Work Instrumental in Helping FBI Close  
Most Extensive "Criminal Investigation" in US History*

At the request of the FBI, a team of DI Office of Transnational Issues (OTI) analysts has solved the mystery of the "streaks of light in the sky" many people saw just before TWA Flight 800 crashed into the Atlantic Ocean off the coast of Long Island on the evening of July 17, 1996. These observations had led to concerns that a missile may have been used to shoot down the aircraft, killing all 230 people aboard. Just what these eyewitnesses saw has been the subject of protracted speculation by investigators, in the print media, and on such shows as *Dateline NBC* and *Unsolved Mysteries*.

Using 244 eyewitness reports and some radar data provided by the FBI, along with limited information from the aircraft's cockpit voice

recorder and infrared data detected by a US satellite, OTI analysts were able to conclude that the so-called "missile sightings" took place **after** the aircraft exploded. What eyewitnesses saw was in fact the burning Boeing 747 in various stages of crippled flight.

The key to deciphering what the eyewitnesses saw was to associate their visual observations with what they heard. This was possible because a very loud sound, recorded by the aircraft's cockpit voice recorder when the aircraft exploded—and just before all onboard recordings ceased—was heard by many eyewitnesses dispersed along the coast of Long Island. This concussive sound was so loud that it shook a 70-ton concrete bridge 11 miles away. (*continued on p. 2*)

## Analysts Explain Mystery...(from p. 1)

Knowing that sound travels about 1,100 feet per second, it was possible to determine approximately what portion of the 49-second crash sequence each eyewitness observed (*see story below and sequence of pictures on page 3*)—and to conclude that the eyewitnesses' observations occurred too late for them to have seen a missile attack the aircraft. But it was also clear that some eyewitnesses' observations could have created the **illusion** of a missile attacking the aircraft, because most eyewitnesses were more than nine miles away from the sequence of events unfolding before them.

the senior analyst involved in the effort, told *What's News*, "The eyewitness accounts were the original cause for speculation that a missile may have been involved—speculation that, in the final analysis, proved unfounded. But these same eyewitness accounts permitted OTI analysts to reconstruct the path of Flight 800 after it exploded . . . after all onboard recorders ceased operating. Without eyewitness assistance, this would not have been possible."▼

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## *What Happened to Flight 800 after it Exploded?*

When Flight 800 exploded, all onboard data recording ceased. As a result, the subsequent path of the aircraft was at first unknown. But, using eyewitness reports, radar tracking data, and aerodynamic modeling, OTI analysts were able to reconstruct the approximate path of Flight 800 from the instant its recordings ended until it struck the water. This flight path reconstruction, in turn, provided the basis for understanding what so many people saw on the evening of July 17—and what some people misinterpreted to be a missile attack.

The following sequence of events, based on OTI's analysis, depicts the current best estimate of what happened to Flight 800 after it exploded. The sequence is depicted in an unclassified 15-minute video created jointly by OTI and the DI Television-Multimedia Center. (*This video can be seen on CIA's television grid on Tuesday, November 25, on Unclassified Channel 19 at 9 and 11 a.m. and 2 and 6 p.m.*)

Just after the aircraft exploded, it pitched up abruptly and climbed several thousand feet, from its last recorded altitude of about 13,800 feet to a maximum altitude of about 17,000 feet. This is consistent with information provided by National Transportation Safety Board (NTSB) investigators and Boeing engineers, who determined that the front third of the aircraft, including the cockpit, separated from the fuselage within four seconds after the aircraft exploded. This significant, sudden loss of mass from the front of the aircraft created an imbalance which caused the rapid pitch up and climb.

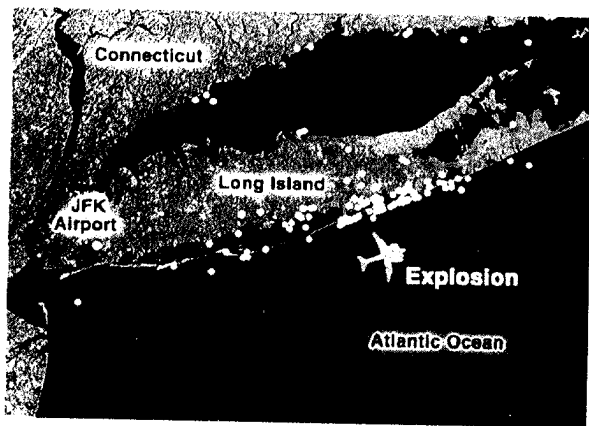
The explosion, although very loud, was not seen by any known eyewitness. However, the subsequent small fire, trailing from the aircraft, was visible to a few of the closest eyewitnesses on land, sea, and in other aircraft. It was repeatedly described as "an ascending white light resembling a flare or

firework." But it was difficult to see against the relatively light sky.

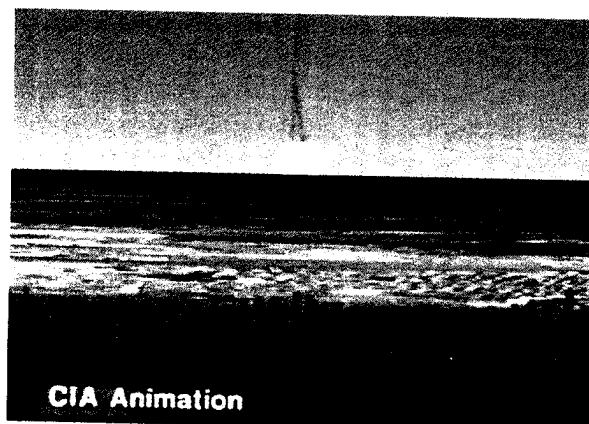
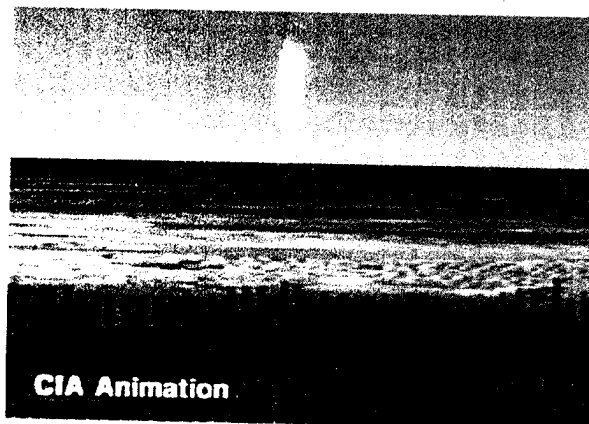
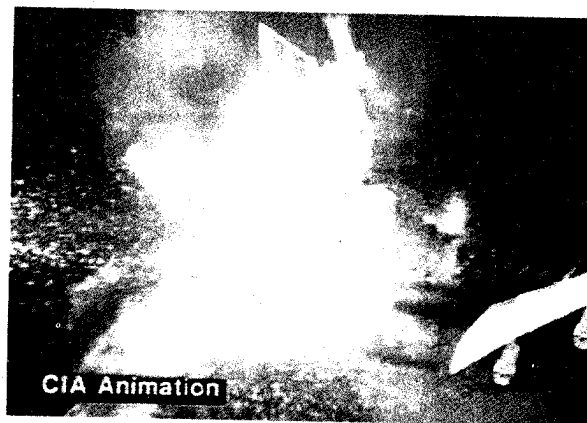
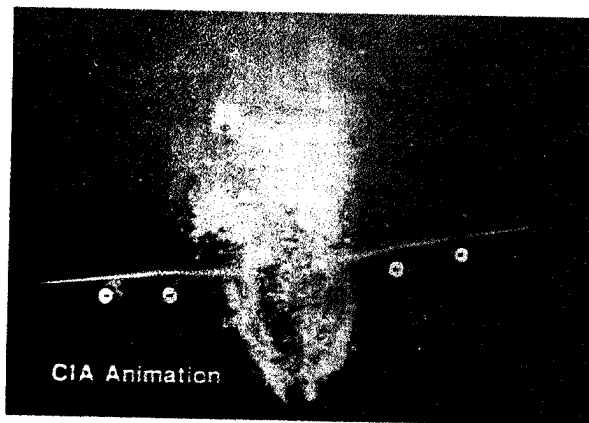
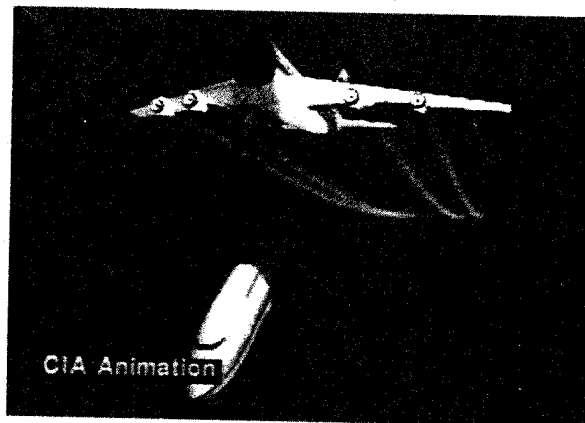
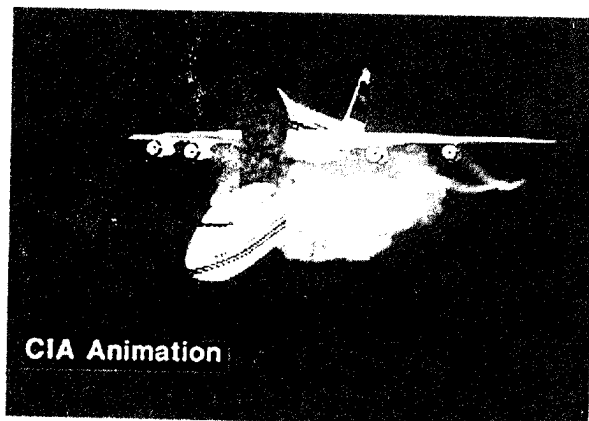
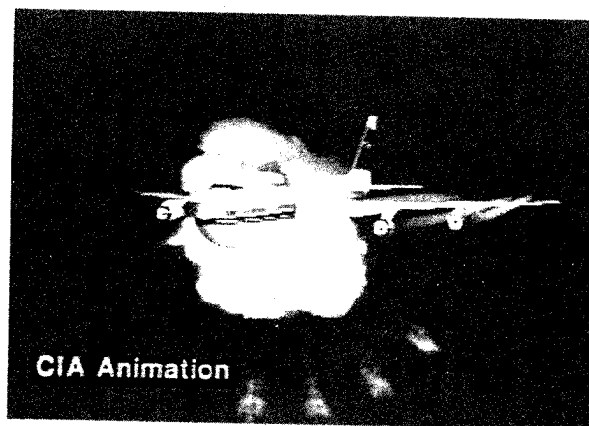
Shortly after Flight 800 reached the peak of its ascent, about 20 seconds after it exploded, a fireball erupted from the aircraft. This was clearly visible to many eyewitnesses. The aircraft then went into a very steep and rapid descent. As the aircraft descended, it produced an increasingly visible fire trail. When the jet reached an altitude of roughly one mile, about 42 seconds after it exploded, its left wing separated from the fuselage, releasing unburned fuel.

The fuel's subsequent ignition and blaze produced a dramatic cascade of flames, visible to eyewitnesses more than 40 miles away, and detected by an infrared sensor aboard a US satellite.

About seven seconds after the left wing detached, and 49 seconds after the initial explosion, the burning debris hit the water.▼



*Eyewitness Locations*



## Questions and Answers Concerning CIA's Involvement in the TWA Flight 800 "Criminal Investigation"

*Q Why did the FBI request CIA's technical and analytical assistance in this "criminal investigation," and under what authority did the CIA respond?*

A The possibility existed that the crash of TWA Flight 800 was caused by **foreign** terrorism, potentially one of the most lethal such acts ever perpetrated against the US. In full accordance with its charter, the CIA responded to the FBI's request for assistance by applying the technical and analytical expertise it normally uses to monitor and assess foreign weapons threats to US national security.

*Q When did this joint relationship begin?*

A Within 24 hours of the catastrophe.

*Q Why did CIA analysts focus their efforts on the eyewitness accounts?*

A Eyewitness accounts of something ascending and culminating in an explosion on the evening of July 17, 1996, were the initial (and only) reason for suspecting that a missile may have been used to shoot down Flight 800. So OTI analysts focused early attention on these reports, methodically dissecting and analyzing each one. This led to the realization that many eyewitnesses reported hearing a loud sound as part of their observations. The subsequent use of "sound propagation analysis" provided the basis for determining what the eyewitnesses saw, and for concluding that all eyewitness observations took place after the aircraft had already exploded.

*Q What sources of information were made available to CIA analysts?*

A The FBI ultimately provided reports from 244 eyewitnesses to the catastrophe. The NTSB, via the FBI, provided the aircraft's location, altitude, speed, and heading at the moment it exploded, some air traffic control radar data, and the times at which the aircraft's cockpit voice recorder and flight data recorder ceased operating. They also noted that a loud sound was recorded just before the recorders ceased operating, and that the front third of the aircraft was believed to have separated soon after the initial explosion.

*Q When did CIA analysts first realize that eyewitnesses probably had observed only the burning aircraft in various stages of crippled flight, rather than a missile attacking the aircraft?*

A Monday, December 30, 1996. But it took almost a month for OTI analysts to document a case solid enough to be formally presented to the FBI and NTSB.

*Q When did CIA analysts decide to document their work in an animated video?*

A About two weeks later. It was agreed by OTI analysts and line managers that such a production was needed to make a convincing case to non-technical audiences that eyewitnesses had seen only the burning aircraft, rather than a missile attack. OTI Front Office managers gave final approval—and allocated the necessary funding—on February 11, 1997.

*Q When were the results of CIA's analysis provided to the FBI?*

A Preliminary results were provided via telephone within 24 hours of the time the initial conclusion was made. Detailed results were provided on March 28 in a memorandum from the DDI to FBI Assistant Director James Kallstrom. On June 18, CIA analysts briefed their results to Kallstrom and about 30 others from the FBI and the Army's Missile and Space Intelligence Center (MSIC). They also showed an early version of their video ("TWA Flight 800: What Did the Eyewitnesses See?") at this time. On October 22, CIA analysts provided a second briefing, and edited video, to Kallstrom, incorporating information from more than 30 FBI reinterviews of eyewitnesses. At the conclusion of this session, Kallstrom expressed his appreciation for CIA's assistance, and his desire to use the CIA video at his news conference announcing the suspension of the criminal investigation, scheduled for the following month. CIA concurred, and undertook final changes to the video to prepare it for public release.

*Q Why weren't the results of CIA's analysis released to the public earlier?*

A According to a mutual agreement between the FBI and the CIA at the beginning of their joint efforts, the CIA's role would be ancillary to the FBI's overall "criminal investigation." This successful relationship permitted the FBI to proceed with their investigation in a methodical manner, drawing upon whatever resources they deemed necessary as their investigation moved forward.

*Q How much of the analysis portrayed in the CIA video was performed by CIA weapons analysts?*

A All of it.

*Q How many analysts were involved?*

A Five, all in OTI—one full-time, two almost full-time, and two for protracted periods. But dozens of staffers and contractors throughout the DI helped make this project a success.

*Q Will the CIA continue to support US airline safety issues?*

A OTI will provide support to the NTSB during their Flight 800 public hearings, scheduled to begin on December 8. In addition, OTI analysts are working with the Federal Aviation Administration to assess the man-portable surface-to-air missile threat to commercial aviation.▼

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## FBI News Conference on TWA Flight 800: The Aftermath

On November 18, the FBI held a major news conference to release its findings, and to suspend its worldwide criminal probe—the most extensive in FBI history. After discussing the exhaustive forensic work done by the FBI and other agencies, FBI Assistant Director James Kallstrom released a 15-minute unclassified CIA video which documented the CIA's conclusion that eyewitnesses to the disaster did **not** see a missile destroy the aircraft.

Within minutes, excerpts from the video were picked up by broadcast and print media worldwide. Judging from the initial reactions by the media and public, the video—particularly its clear explanation of CIA's technical analysis, and its graphic representation of the aircraft in various stages of crippled flight—was successful. In particular, several family members of victims of the crash expressed their strong appreciation for CIA's meticulous analysis. The reaction by Robert

Hager, on NBC's *Today Show* the following morning, was typical: "The work was riveting. CIA analysts prepared it after matching eyewitness accounts with precise data from radar, from the plane's recorders, and from [infrared data from a US satellite]. The result: A fascinating, highly informed CIA video representation of the plane's last 50 seconds."▼

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## TWA Flight 800 Analysis: One OTI Manager's Perspective

Broadly speaking, the work done by OTI's technical weapons analysts on TWA Flight 800 is standard, multi-source DI analysis. Technical analysts have considerable expertise using radar tracking data and satellite infrared data as critical inputs to weapons performance assessments. The timing data obtained from Flight 800's cockpit voice recorder is similar to data that might be obtained from SIGINT or COMINT. The eyewitness reporting is similar to HUMINT data. For example, while the analysts were not concerned about eyewitness descriptions being "deceptions by a foreign intelligence service," they did have to evaluate each report and description in light of what other eyewitnesses described, and what the technical data showed.

The sound propagation analysis is a much simplified form of the complex technical analytical tools used by weapons analysts to assess foreign systems. Flight reconstructions of missiles and aircraft are done routinely. Furthermore, using video as the medium for explaining a complex technical assessment, or for graphically representing a weapons test, is not unusual for analysts in OTI. (And yes, the Flight 800 video script went through iteration after iteration of review and wordsmithing by peers and managers.) In a nutshell, the Flight 800 work is just another example of what DI analysts do every day, although usually in a much more highly classified domain. (continued on p. 6)

## One Perspective...(from p. 5)

With more than three decades in the technical analysis business, I know that weapons analysts gain a great deal of inner satisfaction from the knowledge that their work supports and impacts US defense policy and the DoD's weapons acquisitions process. For all those involved in the Flight 800 analysis, the inner satisfaction came from different, though more emotionally powerful, directions.

First, during the initial phases of their research, analysts believed there was the very strong possibility that the aircraft was downed by a terrorist act. The opportunity to be involved—to apply one's professional expertise—in analyzing what could have been the most horrific terrorist act ever perpetrated against the US provided strong motivation.

Second, and in the end most important, was the fact that above all else, the crash of Flight 800 was a human tragedy. As the analysis progressed, those involved were strongly motivated by the knowledge that their work and expertise

might help in some small way to bring closure for many of the families of the crash victims. The statements to this effect by several family members after they saw the video were just as satisfying, no—more so, than the kudos analysts receive after publishing an assessment for DoD or State.

If you look at the total effort expended by the FBI and all other agencies worldwide on the investigation over the past 16 months, the CIA's level of effort was relatively small. Without an explanation of what the eyewitnesses saw, however, the FBI would have been hard pressed to end its criminal investigation. The public, having been treated to 16 months of unchallenged theories, would never have been convinced that the eyewitnesses had not seen a missile destroy the aircraft.

CIA's work was instrumental in helping the FBI close the most extensive "criminal investigation" in US history. Everyone at CIA involved with this investigation—from the early hours after the crash to the press conference on November 18—can be justly proud of their part. Those of us who were on the periphery, and those who just recently learned that CIA was involved at all, share in that pride.▼

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## TWA Flight 800 Work: The Bottom Line

*The following note was posted to the DI Discussion Database after the FBI's November 18 news conference.*

Although it is indeed tragic that our world requires such work on occasion, I would like to commend those CIA employees whose efforts helped greatly in solving the mystery surrounding the crash. I believe you have done an outstanding service to your country, your government, and—most particularly—hundreds of grieving loved ones searching for answers. I firmly believe you have helped those left behind to now live in peace.

—Anonymous

### Response

Your kind words are most appreciated. **Many** people at the CIA, FBI, and elsewhere helped make this project a success. And **anyone** who has stood in the TWA Flight 800 reconstruction hangar in Calverton, New York, knows what motivated us. After 16 months of work, our hope now is that family members and friends of the crash victims derive at least some small measure of solace knowing we put forth our absolute best effort trying to give them some answers to this almost unimaginable tragedy. Preliminary feedback suggests they do.

